56, 57, 59 to 61, 64, 67, 97, 102 to 105 and 107 to 110 as follows. A marked-up copy of the amended claims, showing the changes made thereto, is attached. Note that all claims currently pending in this application, including those not currently being amended, have been reproduced below for the Examiner's convenience.

1, 3, 6, 7, 11 to 21, 23, 26 and 27. Cancelled.

---

29. (Three Times Amended) A method of producing a solar cell comprising the steps of:

forming a porous layer in a surface region of a first substrate;

forming a first semiconductor layer on the porous layer by liquid phase epitaxy under a reducing atmosphere;

forming a second semiconductor layer on the first semiconductor layer by liquid phase epitaxy;

bonding the first substrate to a second substrate to obtain a multiple layer structure with the second semiconductor layer positioned inside; and

separating the first substrate from the multiple layer structure by utilizing the porous layer to transfer the first and second semiconductor layers to the second substrate;

wherein in the liquid phase epitaxy used to form the first semiconductor layer, a melting solution in which elements for forming the first semiconductor layer are dissolved up to a desired concentration is brought into contact with a surface of the porous layer which is annealed under a reducing atmosphere in advance, while a surface

temperature of the porous layer is made lower than a temperature at which elements in the melting solution having the desired concentration are saturated by at least 5 degrees Celsius.

30 - 51. Cancelled.

52. (Twice Amended) A method of producing a semiconductor member comprising the steps of:

(a) forming a porous layer in a surface region of a first substrate;

(b-1) immersing the porous layer into a melting solution in which elements for forming a first semiconductor layer to be grown are dissolved up to a supersaturated state or a substantially supersaturated state, while the melting solution has a temperature that is lower than a temperature at which the elements are saturated by at least 5 degrees Celsius, under a reducing atmosphere to grow the first semiconductor layer on a surface of the porous layer;

(b-2) forming a second semiconductor layer on the first semiconductor layer by liquid phase epitaxy;

(c) bonding a second substrate onto a surface side of the first substrate on which at least the porous layer and the first semiconductor layer are formed; and

(d) separating the first substrate from the second substrate at the porous layer to transfer the first and second semiconductor layers separated from the first substrate to the second substrate.

53. (Unamended From Previous Version) A method of producing a semiconductor member according to claim 52, wherein a surface of the first substrate separated in the step (d) is treated and then again subjected to the step (a) as the first substrate.

54. (Amended) A method of producing a semiconductor member according to claim 53, wherein after the surface of the first substrate separated in the step (d) is treated and before it is again subjected to the step (a), a semiconductor layer into which an impurity is introduced by liquid phase growth is allowed to grow on the surface of the first substrate.

55. (Amended) A method of producing a semiconductor member according to claim 54, wherein after the surface of the first substrate separated in the step (d) is treated and prior to the growth of the semiconductor layer into which the impurity is introduced, a semiconductor layer into which no impurity is introduced or into which impurity is introduced with a small concentration is formed on the surface of the first substrate.

56. (Amended) A method of producing a semiconductor member according to claim 54, wherein a semiconductor having a purity of 99.99% or less is used as the first substrate.

57. (Amended) A method of producing a semiconductor member comprising the steps of:

(a) forming a porous layer in a surface region of a first substrate;

(b-1) immersing, into a melting solution in which elements for forming a first semiconductor layer to be grown are dissolved up to a desired concentration, the porous layer, whose surface temperature is made lower than a temperature at which the melting solution having the desired concentration is saturated by at least 5 degrees Celsius, under a reducing atmosphere to grow the first semiconductor layer on a surface of the porous layer;

(b-2) forming a second semiconductor layer on the first semiconductor layer by liquid phase epitaxy;

(c) bonding a second substrate onto a surface side of the first substrate on which at least the porous layer and the first semiconductor layer are formed; and

(d) separating the first substrate from the second substrate at the porous layer to transfer the first and second semiconductor layers separated from the first substrate to the second substrate.

58. (Unamended From Previous Version) A method of producing a semiconductor member according to claim 57, wherein a surface of the first substrate separated in the step (d) is treated and then again subjected to the step (a) as the first substrate.

59. (Amended) A method of producing a semiconductor member according to claim 58, wherein after the surface of the first substrate separated in the step (d) is treated and before it is again subjected to the step (a), a semiconductor layer into which an impurity is introduced by liquid phase growth is allowed to grow on the surface of the first substrate.

60. (Amended) A method of producing a semiconductor member according to claim 59, wherein after the surface of the first substrate in the step (d) is treated and prior to the growth of the semiconductor layer into which the impurity is introduced, a semiconductor layer into which no impurity is introduced or into which an impurity is introduced with a small concentration is formed on the surface of the first substrate.

61. (Amended) A method of producing a semiconductor member according to claim 59, wherein a semiconductor having a purity of 99.99% or less is used as the first substrate.

62. (Unamended From Previous Version) A method of producing a semiconductor member according to claim 52, wherein the first substrate is crystalline.

63. (Unamended From Previous Version) A method of producing a semiconductor member according to claim 52, wherein the first substrate is made of silicon single-crystal.

64. (Amended) A method of producing a solar cell, comprising a step of using the semiconductor layers transferred to the second substrate which are obtained by the method of claim 52.

65. (Unamended From Previous Version) A method of producing a semiconductor member according to claim 57, wherein the first substrate is crystalline.

66. (Unamended From Previous Version) A method of producing a semiconductor member according to claim 57, wherein the first substrate is made of silicon single-crystal.

67. (Amended) A method of producing a solar cell, comprising a step of using the semiconductor layers transferred to the second substrate which are obtained by the method of claim 57.

82. (Unamended From Previous Version) An apparatus of producing a semiconductor member in which a substrate comprising a porous layer is stored and a semiconductor layer is formed on the porous layer, the apparatus comprising:

a liquid phase growth vessel for immersing a first thin-film semiconductor layer into a melting solution in which elements for forming a second thin-film semiconductor layer are dissolved up to a saturated state or a supersaturated state under a reducing atmosphere to grow a second thin-film semiconductor layer on a surface of the first thin-film semiconductor layer in liquid phase; and

means for conveying the substrate between a vapor phase growth vessel and the liquid phase growth vessel while keeping the reducing atmosphere.

83. (Unamended From Previous Version) An apparatus according to claim 82, further comprising a vapor phase growth vessel disposed in front of the liquid phase growth vessel, for decomposing a source gas in the reducing atmosphere to grow the first thin-film semiconductor layer on a porous layer surface of the substrate in vapor phase.

84. Cancelled.

85. (Unamended From Previous Version) An apparatus of producing a solar cell in which a substrate comprising a porous layer is stored and a semiconductor layer is formed on the porous layer, the apparatus comprising:

a liquid phase growth vessel for immersing a first thin-film semiconductor layer into a melting solution in which elements for forming a second thin-film semiconductor layer are dissolved up to a saturated state or a supersaturated state under a reducing atmosphere to grow a second thin-film semiconductor layer having a different conductivity type from that of the first thin-film semiconductor layer on a surface of the first thin-film semiconductor layer in liquid phase; and

means for conveying the substrate between a vapor phase growth vessel and the liquid phase growth vessel while keeping the reducing atmosphere.

86. (Unamended From Previous Version) An apparatus according to claim 85, further comprising a vapor phase growth vessel disposed in front of the liquid phase growth vessel, for decomposing a source gas in the reducing atmosphere to grow the first thin-film semiconductor layer on a porous layer surface of the substrate in vapor phase.

88. (Unamended From Previous Version) A method according to claim 29, further comprising a step of removing the porous layer remaining on the surface of the first substrate after the first substrate is separated from the transferred semiconductor layers.

[89 - 91, 93. Cancelled.]

94. (Unamended From Previous Version) A method according to claim 29, wherein the bonding step of the second substrate is conducted using an adhesive.

95. (Unamended From Previous Version) A method according to claim 94, wherein the adhesive includes a water-soluble adhesive.

[96. Cancelled.]

97. (Amended) A method according to claim 29, further comprising a step of separating the second substrate to transfer the semiconductor layers onto a third substrate.

98. (Unamended From Previous Version) A method according to claim 29, wherein the second substrate has a water permeability.

99. (Unamended From Previous Version) A method according to claim 97, wherein the separation of the second substrate is conducted by the deterioration of adhesion of the adhesive used for bonding of the second substrate.

100. (Unamended From Previous Version) A method according to claim 99, wherein the deterioration of the adhesion is conducted by a liquid that has passed through the second substrate.

101. (Unamended From Previous Version) A method according to claim 99, wherein the adhesive is water-soluble, and the deterioration of the adhesion is conducted by a water that permeates the second substrate.

102. (Amended) A method according to claim 29, wherein an impurity in the porous layer is diffused into the first semiconductor layer.

103. (Amended) A method according to claim 29, wherein the liquid phase epitaxy for forming the first semiconductor layer is conducted with indium as a solvent.

Sub D5

104. (Amended) A method according to claim 29, wherein before the bonding of the second substrate, an impurity is introduced into one or both the semiconductor layers.

105. (Amended) A method according to claim 29, wherein before the bonding of the second substrate, an impurity is introduced into one or both of the semiconductor layers to form a p-n junction.

106. (Unamended From Previous Version) A method according to claim 29, wherein the second substrate has an electroconductive surface.

107. (Amended) A method according to claim 29, further comprising a step of removing the porous layer remaining on the transferred first semiconductor layer.

108. (Amended) A method according to claim 29, further comprising a step of forming an electrode on the transferred semiconductor layers.

109. (Amended) A method according to claim 29, further comprising a step of introducing an impurity into one or both of the transferred semiconductor layers.